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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,061	11/24/2003	Hisao Koga	L8612.03108	9118
24257 7590 08/23/2007 STEVENS DAVIS MILLER & MOSHER, LLP 1615 L STREET, NW SUITE 850 WASHINGTON, DC 20036			EXAMINER FOTAKIS, ARISTOCRATIS	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 08/23/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/719,061

Applicant(s)

KOGA ET AL.

Examiner

Aristocratis Fotakis

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 - 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 - 4, 7 - 12 is/are allowed.
- 6) ☒ Claim(s) 5 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :03/16/2007, 03/06/2007, 08/04/2006, 05/18/2006, 05/02/2005, 07/08/2004, 06/15/2004.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kjeldsen et al (US PG-Pub 20030231714) in view of Jain et al (US PG-Pub 20020181388).

Kjeldsen teaches of a multicarrier receiver for performing data reception by way of digital multicarrier demodulation using a real coefficient wavelet filter bank, said multicarrier receiver (Figs 1 and 7) comprises: a first multiplier and a second multiplier for downconverting a received bandpass signal to a baseband signal (Fig.1, WPM Receiver, Paragraph 0068); a local oscillator for providing said first multiplier with a signal of a predetermined frequency (shown in Fig.1, Paragraph 0068); a  $\pi/2$  phase shifter for delaying the phase of said local oscillator by  $\pi/2$  to generate a carrier orthogonal to said second multiplier (shown in Fig.1, Paragraph 0068); a first LPF and a second LPF for removing an unwanted signal outside the band of a baseband signal output from each of said first and said second multipliers (anti-aliasing filter, Fig.6, Paragraph 0069, *An anti-aliasing filter is known to be a low-pass filter that's used to prevent higher frequencies, in either the signal or noise, from introducing distortion into the digitised signal*); a first wavelet transformer for performing wavelet transform on an in-phase signal and an orthogonal signal output from each of said first LPF and said second LPF (#132, DWPT, Figs.1 and 7, Paragraph 0075); a parallel-to-serial converter for converting a parallel signal output from said equalizer to a serial signal (Multiplexer MUX, #136, Fig.1, Paragraph 0014 and 0077); and a determination unit for determining serial data output from said parallel-to-serial converter (Complex Symbol Detection, Paragraph 0077, Fig.1). However, Kjeldsen does not specifically teach of an equalizer

for equalizing each parallel signal of an in-phase signal and an orthogonal signal output from said first wavelet transformer as a complex signal of each subcarrier.

Jain teaches of an orthogonal wavelet division multiplexing (OWDM) communication system including a synthesis section, a channel interface and an analysis section. The synthesis section includes a filter pair bank with multiple inputs and an output that provides an OWDM signal. Each input receives a corresponding symbol of a supersymbol, where the symbols are from a selected modulation scheme. The synthesis section generates the OWDM signal as a combination of weighted OWDM pulses, where each weighted OWDM pulse represents of a symbol of the supersymbol. An OWDM Spread Spectrum (OWSS) communication system that uses broad-time and broadband pulses generated from a family of OWDM pulses together with a set of orthogonal PN code vectors. The OWSS pulses are mutually orthogonal and allow multi-user operation. Each user is assigned an OWSS pulse corresponding to a particular PN code. OWSS enables high rate operation for wireless channels with the use of an equalizer with FE and DFE sections (Abstract, Figs.1 and 3, see also Paragraphs 0045 – 0046).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have equalized each parallel I and Q signal from the wavelet transformer to enable a high rate operation for the wireless channels.

***Allowable Subject Matter***

Claims 1 – 4 and 7 – 12 are allowed.

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

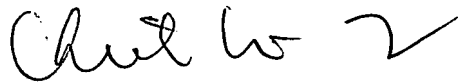
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aristocratis Fotakis whose telephone number is (571) 270-1206. The examiner can normally be reached on Monday - Thursday 7 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AF

A handwritten signature in black ink, appearing to be "A. J. Johnson", written over a horizontal line.A handwritten signature in black ink, appearing to be "Chieh M. Fan", written in a cursive style.

CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER